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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,139	06/23/2005	Tadaharu Yokokawa	2005_0661A	6535

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WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER	
JANAKIRAMAN, NITHYA	
ART UNIT	PAPER NUMBER
2123	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,139	YOKOKAWA ET AL.	
	Examiner	Art Unit	
	Nithya Janakiraman	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/20/05, 11/30/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to the application filed on 6/23/2005, with Foreign Priority Date 10/30/2002. Claims 1-14 are presented for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Regarding independent claims 1, 2, 9 and 10, the terms "working temperature", "working stress", "structural factor", "alloy characteristics", are vague and indefinite terms.

3. The listed terms lack any definition in either the specification or in the claim body, and it is not possible to determine a clear limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2241358, Yamazaki et al. (hereinafter Yamasaki) in view of US Patent 5,151,249, Austin et al. (hereinafter Austin).

5. Yamasaki discloses a γ ' precipitation strengthened Ni-based superalloy designing support apparatus wherein the alloy composition is input, and the convergent calculation of composition and partitioning ratio of γ' phase which is the constituent phase and the convergent calculation of volume fraction of γ' phase are coupled with each other, and structural factors which are composition of γ' phase and γ' phase, volume fraction of γ' phase, and lattice misfit are calculated, and then the mechanical performance is calculated from the structural factors and alloy composition.

6. However, Yamasaki fails to teach the apparatus as applicable to platinum group elements.

7. Austin teaches a nickel-based superalloy consisting of several of the platinum group elements.

8. Yamasaki and Austin are analogous art because they are both related to nickel-based superalloys used for turbine engines.

9. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to design the superalloy of Yamasaki consisting of platinum group elements of Austin, motivated by the desire to design the highest performance alloy and the latest advancements in micro structural stability (see Austin column 1, "One of the most demanding materials applications is founding turbine components used in aircraft jet engines; the higher the operating temperature of an engine, the greater its efficiency, and the more power it can produce

from each gallon of fuel. There is, therefore, an incentive to operate such engines at as high a temperature as possible...").

10. Regarding independent claim 1 (and 2), Yamasaki and Austin teach:

A γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program (and designing support apparatus), in order to support designing of γ' precipitation strengthened platinum group element-added Ni-based superalloy (see Yamasaki claim 1, Austin claim 1), which cause the computer to function as:

input means for inputting alloy composition, working temperature and working stress of Ni-based superalloy (see Yamasaki claim 1, lines 5-6);

storage means for preliminarily storing Ni-based superalloy constituent elements, structural factor formula, and alloy characteristics formula (see Yamasaki claim 1, lines 8-10);

structural factor calculating means for calculating the structural factors from the alloy composition by using the structural factor formula being read out from the storage means (see Yamasaki, claim 1, lines 8-10);

alloy characteristics calculating means for calculating the alloy characteristics from the alloy composition, structural factor, working temperature, and working stress by using the alloy characteristics formula being read out from the storage means (see Yamasaki claim 1, lines 8-10); and

output means for outputting the structural factor and alloy characteristics together with the alloy composition (see Yamasaki, claim 1, lines 10-13).

11. Regarding claim 3, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 1 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus (see Yamasaki claim 1, Austin claim 1) of claim 2, wherein constituent elements stored in the storage means are Ni, Co, Cr, Mo, W, AI, Ti, Nb, Ta, Hf, Re, Ir, Ru, Rh, Pd, and Pt (see Austin, column 2, lines 11-22).

12. Regarding claim 4, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 1 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 2 (see Yamasaki claim 1, Austin claim 1), wherein the structural factor formula stored in the storage means includes at least the equilibrium formula of gamma phase and γ' phase at working temperature (see Yamasaki, claim 3).

13. Regarding claim 5, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 4 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 4 (see Yamasaki claim 1, Austin claim 1), wherein the equilibrium formula of γ phase and γ' phase is composed of a formula of γ' surface at working temperature and a formula of partitioning ratio (see Yamasaki claim 4).

14. Regarding claim 6, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 1 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 2 (see Yamasaki claim 1, Austin claim 1), wherein the alloy characteristics formula stored in the storage means is expressed as function of

alloy composition, structural factor, working temperature and working stress (see Yamasaki, claim 5).

15. Regarding claim 7, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 1 (see Yamasaki claim 1, Austin claim 1), wherein the computer is further functioned as γ' phase calculating means for calculating the composition of γ phase and γ' phase at working temperature (see Yamasaki, Table 1), and the amount ratio of γ' phase, by simultaneously operating iterative convergent calculation of γ' phase composition and partitioning ratio about constituent elements, and iterative calculation of γ' phase quantity (see Yamasaki, Table 1).

16. Regarding claim 8, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 2 (see Yamasaki claim 1, Austin claim 1), further comprising γ' phase calculating means for calculating the composition of γ phase and γ' phase at working temperature (see Figure 2, "Calculation of composition"), and the volume fraction of γ' phase, by simultaneously operating iterative convergent calculation of γ' phase composition and partitioning ratio about constituent elements (see Figure 2, "quantitative ratio"), and iterative calculation of γ' phase quantity (see Figure 3).

17. Regarding claims 9 (and 10), Yamasaki and Austin teach:

A γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program (and designing support apparatus), in order to support designing of γ'

precipitation strengthened platinum group element-added Ni-based superalloy (see Yamasaki claim 1, Austin claim 1), which cause the computer to function as:

input means for inputting one or more required performances, working temperature and working stress of Ni-based superalloy (see Yamasaki claim 1, lines 5-6);

storage means for preliminarily storing Ni-based superalloy constituent elements, structural factor formula, and alloy characteristics formula (see Yamasaki claim 1, lines 8-10);

alloy composition calculating means for calculating the alloy composition for satisfying the required performance (see Yamasaki, claim 13);

structural factor calculating means for calculating the structural factors from the alloy composition by using the structural factor formula being read out from the storage means (see Yamasaki, claim 1, lines 8-10);

alloy characteristics calculating means for calculating the alloy characteristics from the alloy composition, structural factor, working temperature, and working stress by using the alloy characteristics formula being read out from the storage means (see Yamasaki claim 1, lines 8-10); and

output means for outputting the structural factor and alloy characteristics together with the alloy composition (see Yamasaki, claim 1, lines 10-13).

18. Regarding claim 11, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 9 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 10 (see Yamasaki claim 1, Austin claim

1), wherein constituent elements stored in the storage means are Ni, Co, Cr, Mo, W, AI, Ti, Nb, Ta, Hf, Re, Ir, Ru, Rh, Pd, and Pt (see Austin, column 2, lines 11-22).

19. Regarding claim 12, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 9 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 10 (see Yamasaki claim 1, Austin claim 1), wherein the structural factor formula stored in the storage means includes at least the equilibrium formula of γ phase and γ' phase at working temperature (see Yamasaki, claim 3).

20. Regarding claim 13, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 12 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 12 (see Yamasaki claim 1, Austin claim 1), wherein the equilibrium formula of γ phase and γ' phase is composed of a formula of γ' surface at working temperature and a formula of distribution ratio (see Yamasaki, Figure 3).

21. Regarding claim 14, Yamasaki and Austin teach:

The γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support program of claim 9 or γ' precipitation strengthened platinum group element-added Ni-based superalloy designing support apparatus of claim 10 (see Yamasaki claim 1, Austin claim 1), wherein the required performance is one or more selected from one or both of the alloy characteristics and structural factor (see Figure 2, "Output of composition, structural factors and properties of alloy").

Additional References

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-US 2004/0221925: A Ni-based alloy hardened with the γ' phase with at least on of the platinum group elements, which is able to exhibit not only superior strength at high temperatures, but also excellent hot corrosion resistance and oxidation resistance at high temperatures.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nithya Janakiraman whose telephone number is 571-270-1003. The examiner can normally be reached on Monday-Thursday, 8:00am-5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on (571)272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1/19/07

PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

NJ